

# State of Colorado Energy & Carbon Management Commission

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403529020

Receive Date:

09/13/2023

Report taken by:

Krystal Heibel

## Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27. This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

### OPERATOR INFORMATION

Name of Operator: <u>BONANZA CREEK ENERGY OPERATING COMPANY LLC</u>	Operator No: <u>8960</u>	Phone Numbers
Address: <u>555 17TH STREET SUITE 3700</u>		
City: <u>DENVER</u>	State: <u>CO</u> Zip: <u>80202</u>	
Contact Person: <u>Jacob Evans</u>	Email: <u>jevans@civiresources.com</u>	
		Phone: <u>(303) 2947864</u>
		Mobile: <u>(303) 8293811</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 15983 Initial Form 27 Document #: 402492917

#### PURPOSE INFORMATION

- ☐ Rule 913.c.(1): Pit or Cuttings Trench closure.
- ☐ Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- ☒ Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- ☐ Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- ☐ Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- ☒ Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- ☐ Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- ☐ Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- ☐ Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- ☐ Rule 913.g: Changes of Operator.
- ☐ Rule 915.b: Request to leave elevated inorganics in situ.
- ☐ Other: \_\_\_\_\_

#### SITE INFORMATION

No Multiple Facilities

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>477881</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Park U-4-9XRLC Flowline</u>		Latitude: <u>40.348840</u>	Longitude: <u>-104.429914</u>
		** correct Lat/Long if needed: Latitude: <u>40.348840</u>	Longitude: <u>-104.429914</u>
QtrQtr: <u>SWSW</u>	Sec: <u>34</u>	Twp: <u>5N</u>	Range: <u>63W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

#### SITE CONDITIONS

General soil type - USCS Classifications GM Most Sensitive Adjacent Land Use Range Land

Is domestic water well within 1/4 mile? Yes Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

**Other Potential Receptors within 1/4 mile**

Wetlands ~900' SE, CR 50 ~400' W, Irrigation Ditch ~600' SW, Empire Intake Ditch ~1,200' S, Occupied Structure 700' W

## SITE INVESTIGATION PLAN

### TYPE OF WASTE:

- ☒ E&P Waste      ☐ Other E&P Waste      ☐ Non-E&P Waste
- ☒ Produced Water      ☐ Workover Fluids
- ☒ Oil      ☐ Tank Bottoms
- ☐ Condensate      ☐ Pigging Waste
- ☐ Drilling Fluids      ☐ Rig Wash
- ☐ Drill Cuttings      ☐ Spent Filters
- ☐ Pit Bottoms
- ☐ Other (as described by EPA)

### DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	~150' x 100'	Laboratory analysis
Yes	SOILS	~150' x 100"	Laboratory analysis

### INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Internal corrosion allowed approximately 1,120 bbls of oil and 280 bbls of produced water to be released to the ground and subsurface. Once discovered the flowline was immediately shut in to stop the release and blown down to alleviate the remaining pressure on the line. The pooled fluid and approximately top 18" of soil were removed and hauled to a COGCC approved disposal facility. Ten potholes were dug and sampled to delineate the lateral extent of the subsurface impact and eight soil borings were drilled to delineate the vertical impact. Soil and groundwater samples were collected and submitted for laboratory analysis. An approximately 40' x 40' bell hole was dug around the flowline so the compromised section of the line could be removed and analyzed. The impacted soil was hauled to a COGCC approved disposal facility. Ten bags of activated carbon were mixed into the excavation to promote biodegradation. Bonanza Creek is currently working with an environmental consultant to develop an in situ remediation system to treat the remaining soil and groundwater remaining impact. Once the system is developed Bonanza Creek will update the Form 27 with additional information.

### PROPOSED SAMPLING PLAN

#### Proposed Soil Sampling

- ☒ Will soil samples be collected as part of this investigation? ( Number, type (grab/composite), analyses, and locations of samples ):

Twentyfour grab type soil samples were collected to vertically and laterally delineate the release footprint. The ten samples collected from the potholes were analyzed for TPH, BTEX, EC, SAR, and pH. The 14 samples collected from the soil borings were analyzed for TPH and BTEX. Additional soil sampling will be conducted as necessary.

#### Proposed Groundwater Sampling

- ☒ Will groundwater samples be collected as part of this investigation? ( Number, analyses, and locations of samples ):

Ten groundwater samples were collected from the potholes used to laterally delineate the subsurface impact. The groundwater samples were submitted and analyzed for BTEX. Three residential wells were sampled on 9/26/2020 and analyzed for the 318A baseline suite. Another recently discovered monitoring well located approximately 375' NW of the release will be sampled on 9/30/2020. All analytical results will be included in a supplemental Form 27. BCEOC is working to develop an air sparge/soil vapor extraction remediation system to treat the remaining soil and groundwater impact in-place.

#### Proposed Surface Water Sampling

- ☐ Will surface water samples be collected as part of this investigation? ( Number, analyses, and locations of samples ):

### Additional Investigative Actions

- ☐ Additional alternative investigative actions described in attached Site Investigation Plan ( summary ):

## SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 24  
Number of soil samples exceeding 915-1 6  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 15000

### NA / ND

-- Highest concentration of TPH (mg/kg) 17900  
ND Highest concentration of SAR           
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 5

### Groundwater

Number of groundwater samples collected 27  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 3  
Number of groundwater monitoring wells installed 27  
Number of groundwater samples exceeding 915-1 7

-- Highest concentration of Benzene (µg/l) 140  
-- Highest concentration of Toluene (µg/l) 1.3  
-- Highest concentration of Ethylbenzene (µg/l) 73  
-- Highest concentration of Xylene (µg/l) 180  
NA Highest concentration of Methane (mg/l)         

### Surface Water

0 Number of surface water samples collected  
0 Number of surface water samples exceeding 915-1  
If surface water is impacted, other agency notification may be required.

## OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

☐ Were background samples collected as part of this site investigation?

☐ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards)          Volume of liquid waste (barrels)         

☐ Is further site investigation required?

## REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The source was removed through excavation.

## REMEDICATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

An air sparge and soil vapor extraction system has been installed. A LNAPL recovery system was installed to volatilize the LNAPL and recover the vapors through vacuum. Air samples will continue to be collected to determine the amount of mass removed. The AS system will be reactivated on the periphery of the dissolved phase plume to stop migration of impacted groundwater from reaching point of compliance monitoring wells. The estimated time to achieve a no further action will be April 1, 2026.

## Soil Remediation Summary

☒ In Situ

☒ Ex Situ

☐ Yes    Bioremediation ( or enhanced bioremediation )  
☐ No    Chemical oxidation  
☐ Yes    Air sparge / Soil vapor extraction  
☐ No    Natural Attenuation  
☐ No    Other \_\_\_\_\_

☐ Yes    Excavate and offsite disposal  
          If Yes: Estimated Volume (Cubic Yards)    1000  
          Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_  
☐ No    Excavate and onsite remediation  
          \_\_\_\_\_  
          Land Treatment  
          \_\_\_\_\_  
          Bioremediation (or enhanced bioremediation)  
          \_\_\_\_\_  
          Chemical oxidation  
          \_\_\_\_\_  
          Other \_\_\_\_\_

### **Groundwater Remediation Summary**

☐ Yes    Bioremediation ( or enhanced bioremediation )  
☐ No    Chemical oxidation  
☐ Yes    Air sparge / Soil vapor extraction  
☐ No    Natural Attenuation  
☐ No    Other \_\_\_\_\_

### **GROUNDWATER MONITORING**

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

Twenty-seven (27) monitoring wells were installed and will be sampled on a quarterly basis. Groundwater samples will be collected and submitted to a certified laboratory for analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and inorganic parameters. Monitoring wells with measurable LNAPL will not be sampled. Two additional point of compliance monitoring wells will be installed cross gradient of MW22.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

#### Approved Reporting Schedule:

☒ Quarterly☐ Semi-Annually☐ Annually☐ Other

#### ☐ Request Alternative Reporting Schedule:

☐ Semi-Annually☐ Annually☐ Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

#### Report Type:

☒ Groundwater Monitoring☐ Land Treatment Progress Report☐ O&M Report☐ Other

### Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

The General Liability coverage within the Civitas Resources insurance program includes coverage for bodily injury, property damage, and pollution clean-up costs arising from qualifying pollution events of a sudden and accidental nature subject to a \$1,000,000 per occurrence limit and \$2,000,000 aggregate limit. The Civitas Resources insurance program includes Excess Liability coverage of \$110,000,000 per occurrence and in the aggregate which sits over the sudden and accidental pollution within the General Liability coverage. It is the opinion of Civitas Resources that this total tower of limit is adequate to address the costs of remediation associated with any qualifying pollution event.

Operator anticipates the remaining cost for this project to be: \$ 200000

### WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

NA

Volume of E&P Waste (solid) in cubic yards 1207

E&P waste (solid) description Hydrocarbon bearing soil

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Buffalo Ridge Landfill

Volume of E&P Waste (liquid) in barrels 3000

E&P waste (liquid) description hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: NGL Water Solutions disposal well C-1 and C-6

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

If YES:

☐ Compliant with Rule 913.h.(1).

☐ Compliant with Rule 913.h.(2).

☐ Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? No

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

## RECLAMATION PLAN

### RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

Upon installation of the remediation system, the disturbance area will be completely reclaimed to pre-disturbance conditions. Any excavations will be backfilled. The release footprint is located on a flat surface so recontouring will not be required. The area will be cross-rippled to a depth of ~18" to alleviate compaction. Topsoil and compost will be trucked in and the area will be crimped with straw and seeded with a surface owner approved seed mix.

Is the described reclamation complete? No

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

☐ Interim

☐ Final

Did the Surface Owner provide the seed mix? Yes

If YES, does the seed mix comply with local soil conservation district recommendations? Yes

Did the local soil conservation district provide the seed mix? \_\_\_\_\_

### SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

### PRIOR DATES

Date of Surface Owner notification/consultation, if required. 09/09/2020

Actual Spill or Release date, or date of discovery. 09/09/2020

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/09/2020

Proposed site investigation commencement. 09/09/2020

Proposed completion of site investigation. 09/09/2020

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/09/2020

Proposed date of completion of Remediation. 04/01/2026

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

☐ Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

**OPERATOR COMMENT**

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Jacob Evans

Title: Environmental Advisor

Submit Date: 09/13/2023

Email: jevans@civiresources.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: Krystal Heibel

Date: 10/25/2023

Remediation Project Number: 15983

**COA Type****Description**

	Operator shall provide a revised "Site Map" that illustrates the location of the proposed additional monitoring well that will be installed east of MW-22 within the next Form 27 supplemental.
1 COA	

**Attachment Check List**

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

**Att Doc Num****Name**

403529020	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403529032	MONITORING REPORT
403571820	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 3 Files

**General Comments****User Group****Comment****Comment Date**

Environmental	The laboratory data indicate that the organic constituents were below their respective ECMC Table 915-1 standards in 15 monitoring wells (MW1, MW3, MW5, MW9, MW14, MW16, MW17, MW18, MW19, MW20, MW23, MW24, MW25, MW26 and MW27) for the May 2023 monitoring event. Six monitoring wells (MW4, MW6, MW7, MW8, MW10, MW15) were observed to contain free product. Three wells (MW12, MW13, MW22) exceeded the ECMC Table 915-1 concentration standard for benzene, three wells (MW2, MW11 and MW-21) exceeded the ECMC Table 915-1 concentration standard for benzene and/or one or more TMBs.	10/23/2023
Environmental	LNAPL remains in five of 27 monitoring wells and six of the monitoring wells contain dissolved phase constituents exceeding the ECMC Table 915-1 standards. Since monitoring well MW-22 had a benzene concentration greater than the ECMC Table 915-1 standard, the point of compliance (POC) is no longer present. Therefore, additional monitoring wells will need to be installed east of MW-22 to reestablish POC.	10/23/2023
Environmental	Bonanza Creek is currently working with an environmental consultant to develop an in situ remediation system to treat the remaining soil and groundwater remaining impact. Once the system is developed Bonanza Creek will update the Form 27 with additional information.	10/23/2023

Total: 3 comment(s)